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A City High School

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A CITY HIGH SCHOOL

BY

ARTHUR MELLINGER WAGGONER

THESIS

FOR

DEGREE OF BACHELOR OF SCIENCE

IN

ARCHITECTURE

COLLEGE OF ENGINEERING

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June 6, 1913

THIS IS TO CERTIFY THAT THE THESIS PREPARED UNDER MY SUPERVISION BY

Arthur Mellinger Waggoner

ENTITLED A CITY HIGH SCHOOL

IS APPROVED BY ME AS FULFILLING THIS PART OF THE REQUIREMENTS FOR THE

DEGREE OF Bachelor of Science in Architecture

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Thesis Design.

A CITY HIGH SCHOOL.

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A CITY HIGH SCHOOL.

I.

STATEMENT OF THE PROBLEM.

A school board of a certain city, with a population of thirty-five thousand inhabitants, proposes to erect a new high school building on a city block, three hundred and twenty feet square.

The building must be located on the sight with the principal facade facing south, and on the rear of the lot, provisions shall be made for several tennis courts. The school will have a sub-basement, basement, main or first floor, second floor, and third floor. The requirements for each floor will be taken up and enumerated in the order just named.

Sub-basement.

The sub-basement shall contain lockers, showers, and dressing rooms for both sex, all of which shall be directly connected to a Gymnasium, which shall be two stories in height. The gymnasium is to be used by both boys and girls at different times. This floor shall also provide for fan rooms, store rooms, etc.

Basement.

In the basement shall be located rooms for manual training, forge, moulding, domestic science, offices for instructors, kitchen and lunch room, lockers and toilets for both boys and girls.

Main Floor.

On the main or first floor, there will be a large auditorium, which, with the balcony, will accommodate one thousand

people. The balance of this floor will give place for library, museum, principal's offices, meeting room for the School Board, Superintendent's offices, class rooms, toilet and locker rooms.

Second Floor.

On the second floor, there must be an entrance to the balcony of the auditorium, laboratories for the various required sciences with separate store rooms and lecture rooms, class rooms, large study room, toilets and locker rooms.

Third Floor.

The third floor shall provide rooms for drawing, business department, domestic art, music, lockers, and toilets.

An abundance of fresh air and light will be required in every room. The building is to be of fire proof construction throughout. The cost will not be seriously considered in this design.

The designs for such a building will be the subject of this thesis, and the following drawings will be submitted:- complete set of floor plans, front elevation, side elevation, and longitudinal section.

II.

GENERAL DISCUSSION.

In school house designs, one confronts the problem of satisfying the citizens in regard to the appearance of the building, of satisfying them that it shall meet the needs of the educators, and that it shall be so permanently constructed that its maintenance will not be a burden to the tax payers.

The determining factors in the design of a high school are the sight, the nature of instruction, the number of pupils to be accommodated, the direction from which the majority of the pupils come, and the appropriation.

The data for the designing of public high schools have been more completely standardized than for any other type of structure, except, probably the public library. This fact, however does not make the problem of high school design, an easy one, in fact it imposes upon the designer, the duty of devoting abundant time and careful study to the details and execution of the design.

One realizes this fact most when he remembers how large a part of the life of a community is spent in the school rooms, and how important it is to surround its children with the most perfect environment and safety for their hours of study.

The American high school as we have it today is a building which has been developed from the numerous needs and requirements imposed on the designers, by the ever advance of civilization.

III.

DISCUSSION OF THIS PROBLEM.

In the discussion of this problem, the design of which constitutes my thesis, only the points which are not made evident by the drawings, will be taken up.

I am thoroughly convinced that a high school of this type should be of simple lines, massive, and imposing. Large columns and heavy entablatures are out of character and do not belong to this class of architecture. The greater majority of school children, of a city such as would demand a building as is being presented, come from families who are only moderately situated. Such being the case, the character of their school building should be in keeping with the immediate surroundings. It is admitted that the environment and atmosphere into which we bring our school children should be the most perfect. It should, however, not be of such elaborate character as to cause the pupil to become dissatisfied with the less elaborate surroundings of his home. It is also true that the ideals which are gotten by a high school student be made steadfast as they will no doubt become the ruling factors of his life, so I say he should be confronted with environments which will instill simplicity, integrity, and true companionship, rather than display, grandure and society.

I have taken these more important factors, with the addition of utility and safety, as my theme and endeavored to develop the design along those lines, striving to give to the building, beauty to suit its character.

IV.

DISCUSSION OF PLAN.

The building is to be constructed of brick, stone, terracotta, steel, hollow tile, and concrete.

Rooms should receive light from only one side, so that the corner rooms have one blank wall. The problem of treating this blank wall has been solved by using large brick panels made interesting by the use of patterns. Each class room should have a glass area of one-fifth the floor area, which is considered sufficient by most authorities.

The interior is treated comparatively plain. The corridors are extra wide allowing free passage and ample safety in cases of emergency. The stairways also have been planned for safety. All corridors have tile floors, marble base and rough plaster walls. Stairways have iron newels and balusters with wooden hand rail. Treads and risers are made of terazza, one tread and one riser being in one piece, the treads have a corrugated metal nosing.

The laboratories are arranged in groups each having a separate lecture room and store room. The floors of the laboratories are cement.

Toilet and locker rooms have been placed on each floor for both boys and girls. On the main floor are rooms for both men and women teachers with cloak and toilet rooms in connection. Also on this floor are two rest rooms for each sex, with small toilet rooms. These rooms are to be used in case of sickness, and are arranged with couches, etc.

The gymnasium is two stories in height, thus affording ample space for a spectator's gallery. The gymnasium which is to be used by both boys and girls, has in direct connection with it, lockers and showers for each sex, all of which have a forced system of ventilation.

The auditorium, which directly above the gymnasium, is to be used for chapel, entertainments, lectures, commencement exercises, etc. The seats both in the main floor and balcony are to be stationary, and the floor of the auditorium is to slope toward the stage to insure good sight lines.

The manual training room, wood turning room, and forge room are placed in the basement so that the noise will not be heard in the other parts of the building where classes are being held. The domestic science rooms and kitchen for the lunch room, were also placed in the basement, and all smoke, odors, and steam will be carried away by a forced system of ventilation.

The heating and ventilation will be accomplished by the plenum system. The fresh air will be brought down two large fresh air flues, which are each directly connected by underground passage ways to a fan room. From these two fan rooms the heated air is forced by the fans around through a utility corridor. From this utility corridor, the air is fed into smaller ducts which carry the heated air to their respective rooms. The ventilation is handled through ducts running parallel to the heat ducts. Each room will be fitted with a thermostat which operates a damper in the supply duct, thus maintaining a constant temperature in the rooms. Steam for

the coils of this heating system will be brought, underground in conduit from the old high school heating plant which is two blocks away. The old heating plant will be enlarged to accommodate the increased radiation of the new building.

There is to be an entire steel frame, columns, girders, and beams. Floors are to be constructed of flat tile arches, on top of which will be three inches of cinder concrete. Imbedded in this concrete will be wooden sleepers, to which the wood floor is nailed. All floors except those in the laboratories, toilets, and corridors are to be wood. Laboratories and toilets are to have a smooth concrete floors, laid directly on the hollow tile blocks. The corridors are to have a tile floor laid in cement. The partitions are to be built up of hollow tile blocks, made self supporting over all voids, and the plaster is to be applied directly to the tile. The entire building is to be of strictly fire proof construction. The exterior will be of brick trimmed in terra-cotta and stone.

V.

APPROXIMATE COST OF CONSTRUCTION.

From an examination of many plans of recent fire-proof high school buildings, designed by such men as C. J. B. Snyder, William B. Ittner, and Dwight H. Perkins, I find the costs vary from thirteen and one-half cents per cubic foot to eighteen and six-tenths cents per cubic foot, and from \$ 147.00 to \$ 395.00 per pupil. The price per capita is based on schools accommodating in the neighborhood of 12,000 pupils.

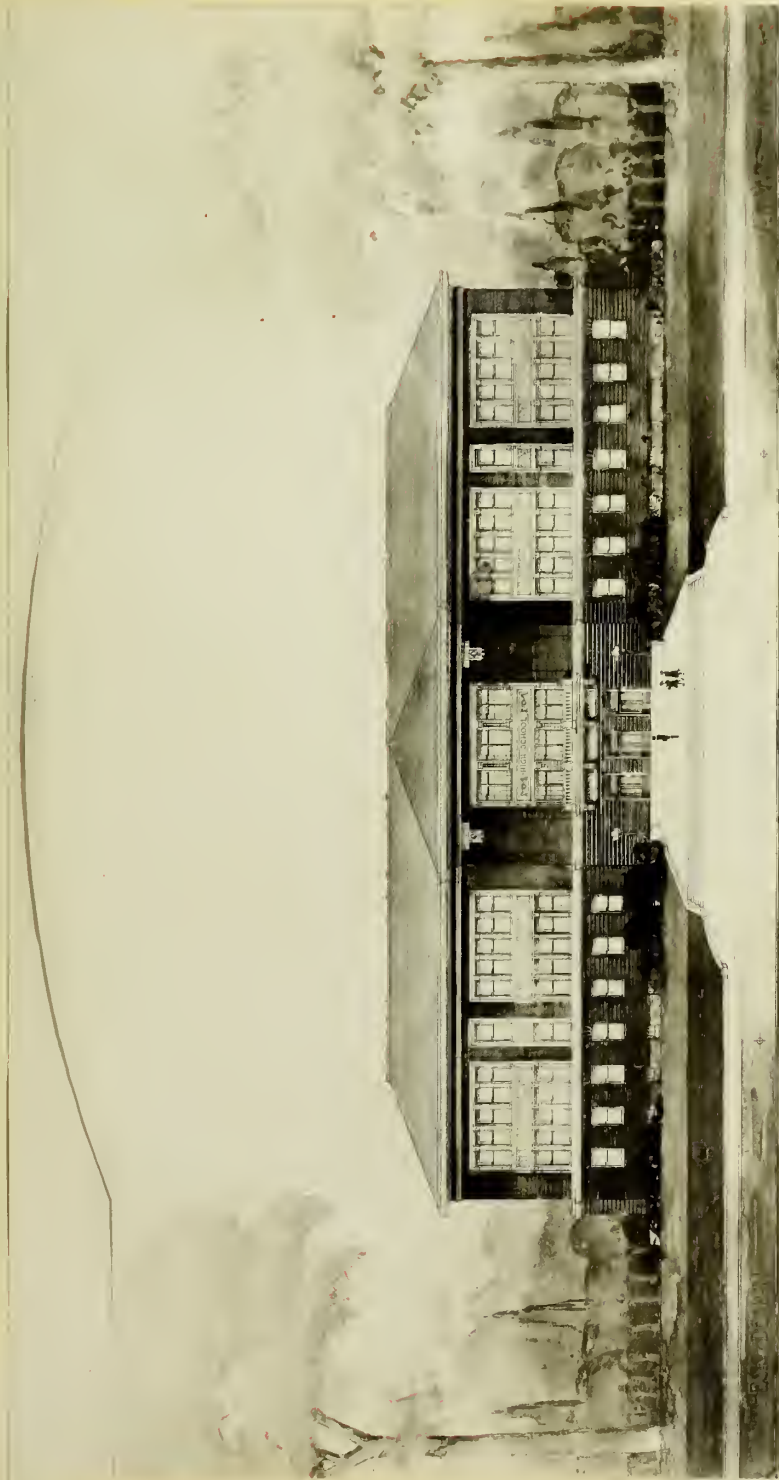
In the design of this high school building, I have endeavored to furnish accommodations for all the different departments that are required in a modern city high school of today, and at the same time allowing for further additions should such be needed. In the designing of the building, the intention was to make the plan as compact and utilitarian as possible and also to keep the cost within the means of the people who are to build and maintain the school. The exterior is very simple, though very expressive in character of this type of building. This consideration of simplicity and utility has enabled me to design a thoroughly modern and well equipped high school building at a very reasonable cost.

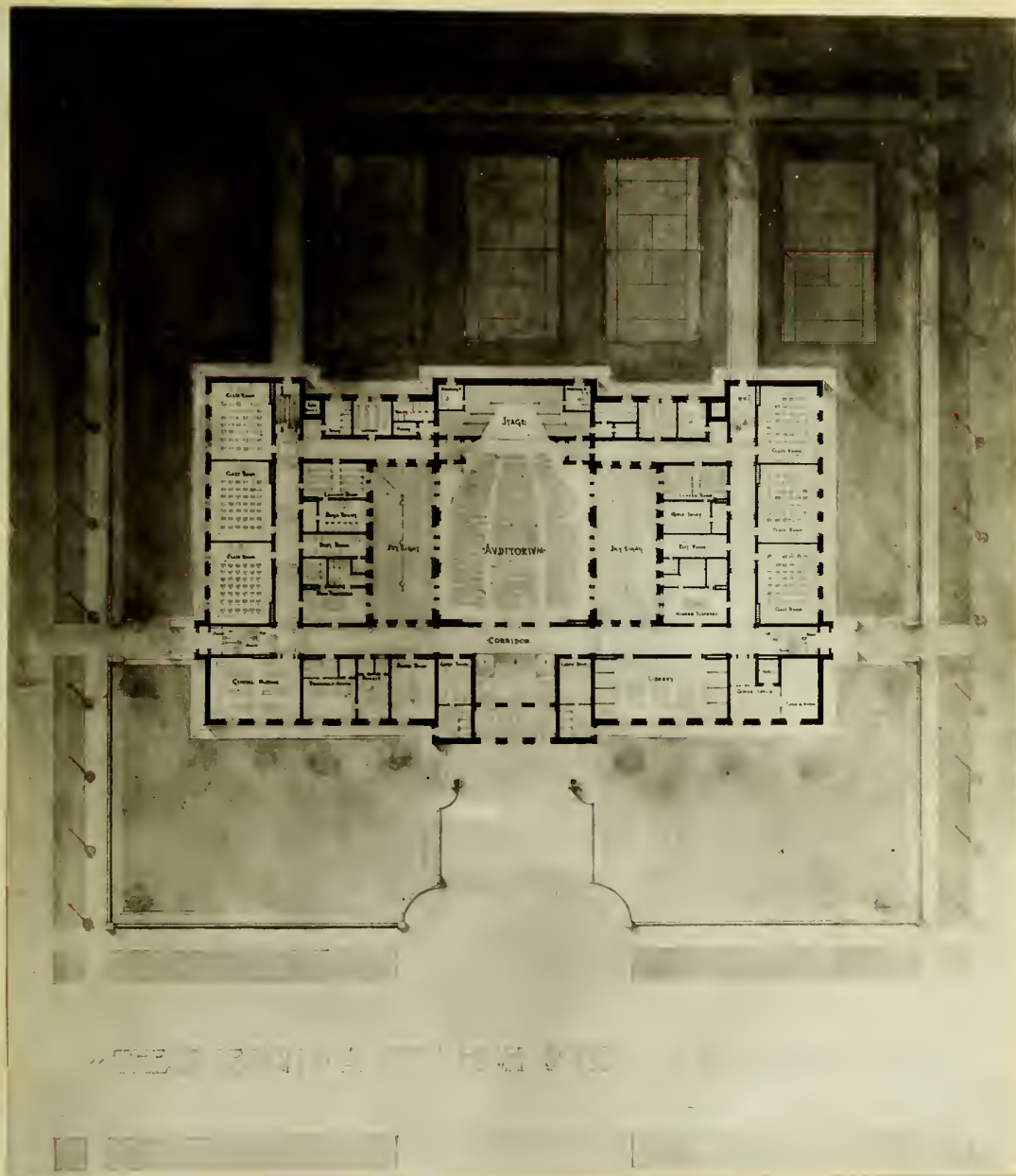
The building is 136 feet by 246 feet giving a total cubical contents of 2,000,000 cubic feet. The cost, complete for occupancy, being estimated at \$ 300,000.00. This gives a cost of fifteen cents per cubic feet, or \$ 375.00 per pupil, estimated per capita cost on the basis of the actual number of pupils to be accommodated as stated in the program.

VI.

BIBLIOGRAPHY.

- Brick Builder, 1908, Vol. 17.
- Brick Builder, 1911, Vol. 20
- American Architect, 1908, Vol. 93.
- American Architect, 1909, Vol. 96.
- American Architect, 1910, Vol. 97.
- American Architect, 1911, Vol. 100.
- American Architect, 1912, Vol. 101.
- Les Medilles Des Concours D'Architectur, No. 7.
- Les Medilles Des Concours D'Architectur, No. 13.
- High School Buildings, by William C. Bruce.





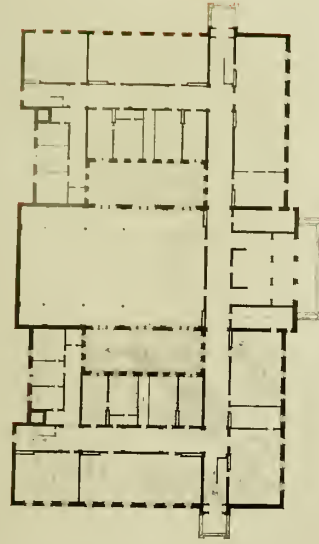


•SIDE ELEVATION•



•SECTION•

THESIS DESIGN: A CITY HOUSE



FIRST FLOOR PLAN







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